

Notice of Allowability

Application No.

10/057,223

Examiner

Alan Diamond

Applicant(s)

McFARLAND, ERICK W.

Art Unit

1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendment filed October 21, 2003.
2. ☒ The allowed claim(s) is/are 4, 6, 9-12, 20, 22, 24, 26, 27, 29, 30, 32, 38-41, 43-46, 48, 49, 57, 58, 60, 61 and 64-96.
3. ☒ The drawings filed on 25 January 2002 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
 - * Certified copies not received: _____.
5. ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
 - (a) ☐ The translation of the foreign language provisional application has been received.
6. ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

7. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
8. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No. _____.
 - (b) ☐ including changes required by the proposed drawing correction filed _____, which has been approved by the Examiner,
 - (c) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No. _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the margin according to 37 CFR 1.121(d).

9. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|--|
| 1 <input type="checkbox"/> Notice of References Cited (PTO-892) | 5 <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2 <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 6 <input checked="" type="checkbox"/> Interview Summary (PTO-413), Paper No. <u>11132003</u> . |
| 3 <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No. _____ | 7 <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4 <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material | 8 <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9 <input type="checkbox"/> Other |

Alan Diamond
Primary Examiner
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EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Michael A. O'Neil on November 13, 2003.

The application has been amended as follows:

In The Specification

Please delete, in its entirety, the continuity data inserted at the beginning of the specification by way of the amendment filed October 21, 2003, and insert in its place the following: --This application claims the benefit of United States Provisional Patent Application 60/287,205, filed April 27, 2001.—

In The Claims

In claim 6, at line 12, please delete "incid nt" and insert in its place --incident--.

In claim 10, at line 6, please delete "a charge separation layer secured to a second side of the conducting layer,".

In claim 11, at line 4, please delete "th reof" and insert in its place --thereof--.

Please cancel claim 28.

In claim 29, at line 3, please delete "m ans" and insert in its place --means--.

In claim 32, at line 6, please delete "sid" and insert in its place --side--.

In claim 39, at line 5, please delete "sid" and insert in its place --side--.

In claim 44, at line 3, please delete "photosensitiv" and insert in its place -- photosensitive--.

In claim 57, at line 13, please delete "lectrically" and insert in its place -- electrically--.

In claim 57, at line 13, please delete "th" and insert in its place --the--.

Please cancel claim 62 and 63.

In claim 86, at line 2, please delete "the" and insert in its place --a--.

2. The following is an examiner's statement of reasons for allowance: Instant claims 4, 6, 9-12, 24, 27, 29, 30, 32, 38-41, 43-46, 48-49, 57, 58, 61, and 64 require that the conducting layer, which is an ultra-thin metal film, and the charge separation layer define a Schottky barrier; and that said conducting layer provides ballistic transport of charge carriers from the light conversion layer to the charge separation layer which eliminates the need for an electrolyte when producing electrical power from light that impinges upon the light energy conversion layer. Both Skotheim (U.S. 4,442,185) and Han (U.S. 6,150,605) use an electrolyte layer. Furthermore, neither of these references teaches or suggest that said ultra-thin metal film conducting layer forms a Schottky barrier with a charge separation layer. Skotheim is the closer of the two references and teaches an ultra-thin platinum film between n-type layer (131) (i.e., the light energy conversion layer) and highly conductive layer (134) (see Figure 13; and the paragraph bridging cols. 15 and 16). The platinum film could form an n-barrier with highly conductive layer (134), which is actually a blend of a highly conductive polymer and a solid polymer electrolyte (see col. 15, lines 33-50). Note that the instant claims

eliminate the need for an electrolyte. Said platinum layer does not form a Schottky barrier with p-type layer (132), which is the charge separation layer. Even if n-type layer (131) was the charge separation layer, there would be no Schottky barrier between the n-type layer and the platinum layer. Skotheim teaches that there may be an additional layer of platinum, chromium or other metal (col. 16, lines 30-36), but there is nothing that leads a skilled artisan to the claimed invention.

Instant claim 20 distinguishes over the prior art since it requires that the conductive layer and the charge separation layer define a metal-insulator-metal junction. Instant claim 22 distinguishes over the prior art since it requires that the charge separation layer comprises a semiconductor of a type, and the device further includes a semiconductor of the opposite type positioned between the charge separation layer and the conducting layer to provide an increased barrier height and photovoltage. Instant claims 26 and 60 distinguish over the prior art since they require that the charge separation layer comprises an insulator/semiconductor multi-layer. Instant claims 65 and 83 distinguish over the prior art since they require a PS-MIM photosensitizer layer.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alan Diamond whose telephone number is 703-308-

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0840. The examiner can normally be reached on Monday through Friday, 5:30 a.m. to 2:00 p.m. ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on 703-308-3322. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9310.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



Alan Diamond
Primary Examiner
Art Unit 1753

Alan Diamond
November 13, 2003